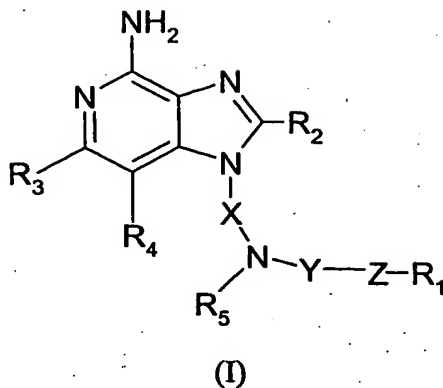


WHAT IS CLAIMED IS:

1. A compound of the formula (I):



wherein

X is alkylene or alkenylene;

Y is -CO- or -CS-;

10 Z is a bond, -O-, or -S-;

R₁ is aryl, heteroaryl, heterocyclyl, alkyl or
alkenyl, each of which may be unsubstituted or substituted by one or more
substituents independently selected from the group consisting of:

-alkyl;

15 -alkenyl;

-aryl;

-heteroaryl;

-heterocyclyl;

-substituted cycloalkyl;

20 -substituted aryl;

-substituted heteroaryl;

substituted heterocyclyl;

-O-alkyl;

-O-(alkyl)₀₋₁-aryl;

25 -O-(alkyl)₀₋₁-substituted aryl;

-O-(alkyl)₀₋₁-heteroaryl;

-O-(alkyl)₀₋₁-substituted heteroaryl;

5 -O-(alkyl)₀₋₁-heterocyclyl;
 -O-(alkyl)₀₋₁-substituted heterocyclyl;
 -COOH;
 -CO-O-alkyl;
 -CO-alkyl;
 -S(O)₀₋₂-alkyl;
 -S(O)₀₋₂-(alkyl)₀₋₁-aryl;
 -S(O)₀₋₂-(alkyl)₀₋₁-substituted aryl;
 10 -S(O)₀₋₂-(alkyl)₀₋₁-heteroaryl;
 -S(O)₀₋₂-(alkyl)₀₋₁-substituted heteroaryl;
 -S(O)₀₋₂-(alkyl)₀₋₁-heterocyclyl;
 -S(O)₀₋₂-(alkyl)₀₋₁-substituted heterocyclyl;
 -(alkyl)₀₋₁-N(R₆)₂;
 -(alkyl)₀₋₁-NR₆-CO-O-alkyl;
 15 -(alkyl)₀₋₁-NR₆-CO-alkyl;
 -(alkyl)₀₋₁-NR₆-CO-aryl;
 -(alkyl)₀₋₁-NR₆-CO-substituted aryl;
 -(alkyl)₀₋₁-NR₆-CO-heteroaryl;
 -(alkyl)₀₋₁-NR₆-CO-substituted heteroaryl;
 20 -N₃;
 -halogen;
 -haloalkyl;
 -haloalkoxy;
 -CO-haloalkyl;
 25 -CO-haloalkoxy;
 -NO₂;
 -CN;
 -OH;
 -SH; and in the case of alkyl, alkenyl, and heterocyclyl, oxo;

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R₂ is selected from the group consisting of:

-hydrogen;

5 -alkyl;
 -alkenyl;
 -aryl;
 -substituted aryl;
 -heteroaryl;
 -substituted heteroaryl;
 -alkyl-O-alkyl;
 -alkyl-S-alkyl;
 10 -alkyl-O-aryl;
 -alkyl-S-aryl;
 -alkyl-O- alkenyl;
 -alkyl-S- alkenyl; and
 -alkyl or alkenyl substituted by one or more substituents selected
 from the group consisting of:
 15 -OH;
 -halogen;
 -N(R₆)₂;
 -CO-N(R₆)₂;
 -CS-N(R₆)₂;
 20 -SO₂-N(R₆)₂;
 -NR₆-CO-C₁₋₁₀ alkyl;
 -NR₆-CS-C₁₋₁₀ alkyl;
 -NR₆- SO₂-C₁₋₁₀ alkyl;
 -CO-C₁₋₁₀ alkyl;
 25 -CO-O-C₁₋₁₀ alkyl;
 -N₃;
 -aryl;
 -substituted aryl;
 -heteroaryl;
 30 -substituted heteroaryl;
 -heterocyclyl;
 -substituted heterocyclyl;

-CO-aryl;
-CO-(substituted aryl);
-CO-heteroaryl; and
-CO-(substituted heteroaryl);

5 R_3 and R_4 are independently selected from the group consisting of
hydrogen, alkyl, alkenyl, halogen, alkoxy, amino, alkylamino, dialkylamino and
alkylthio;

R_5 is H or C_{1-10} alkyl, or R_5 can join with X to form a ring that contains one
or two hetero atoms; or when R_1 is alkyl, R_5 and R_1 can join to form a ring;

10 each R_6 is independently H or C_{1-10} alkyl;
or a pharmaceutically acceptable salt thereof.

2. A compound or salt of claim 1 wherein Y is -CO-.

15 3. A compound or salt of claim 1 wherein Y is -CO- and Z is a bond.

4. A compound or salt of claim 3 wherein R_1 is alkyl, aryl or substituted aryl.

5. A compound or salt of claim 1 wherein Y is -CS-.

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6. A compound or salt of claim 1 wherein Y is -CS- and Z is a bond.

7. A compound or salt of claim 6 wherein R_5 is H and R_1 is aryl or substituted aryl.

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8. A compound or salt of claim 1 wherein R_5 is H.

9. A compound or salt of claim 1 wherein Z is a bond.

10. A compound or salt of claim 9 wherein R_1 is alkyl, aryl, or substituted aryl.

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11. A compound or salt of claim 10 wherein R_1 is alkyl.

12. A compound or salt of claim 1 wherein R₅ is alkyl and R₁ is alkyl.
13. A compound or salt of claim 1 wherein R₂ is H, alkyl or alkyl-O-alkyl.
- 5 14. A compound or salt of claim 1 wherein X is -(CH₂)₂₋₄.
15. A compound or salt of claim 1 wherein R₃ and R₄ are independently H or alkyl.
16. A compound or salt of claim 1 wherein R₃ and R₄ are both methyl.
- 10 17. A compound selected from the group consisting of:
N-[4-(4-Amino-2-butyl-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)butyl]benzamide;
N-[4-(4-Amino-2-butyl-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)butyl]-4-[[2-(dimethylamino)ethoxy](phenyl)methyl]benzamide;
15 N-{4-[4-amino-2-(ethoxymethyl)-6-methyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl]butyl}-2-methylpropanamide;
N-[4-(4-amino-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)butyl]acetamide;
2-(ethoxymethyl)-1-[2-(1-isobutyrylpiperidin-4-yl)ethyl]-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-4-amine;
20 N-[3-(4-amino-2,6,7-trimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)propyl]acetamide;
N-[3-(4-amino-2,6,7-trimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)propyl]-2-methylpropanamide;
N-{3-[4-amino-2-(ethoxymethyl)-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl]propyl} acetamide;
25 N-{3-[4-amino-2-(ethoxymethyl)-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl]propyl}-2-methylpropanamide;
N-[2-(4-amino-2,6,7-trimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)ethyl]acetamide;
N-[2-(4-amino-2,6,7-trimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)ethyl]-2-methylpropanamide;
30 N-{2-[4-amino-2-(ethoxymethyl)-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl]-1,1-dimethylethyl} acetamide;

N-{2-[4-amino-2-(ethoxymethyl)-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl]-1,1-dimethylethyl} benzamide; and

N-[4-(4-Amino-6,7-dimethyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)butyl]-4-[[2-(dimethylamino)ethoxy](phenyl)methyl]benzamide;

5 *N*-[4-(4-amino-6,7-dimethyl-2-propyl-1*H*-imidazo[4,5-*c*]pyridin-1-yl)butyl]acetamide;
or a pharmaceutically acceptable salt thereof.

18. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 in combination with a pharmaceutically acceptable carrier.

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19. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 2 in combination with a pharmaceutically acceptable carrier.

20. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 17 in combination with a pharmaceutically acceptable carrier.

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21. A method of inducing cytokine biosynthesis in an animal comprising administering a therapeutically effective amount of a compound of claim 1 to the animal.

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22. A method of treating a viral disease in an animal comprising administering a therapeutically effective amount of a compound of claim 1 to the animal.

23. A method of treating a neoplastic disease in an animal comprising administering a therapeutically effective amount of a compound of claim 1 to the animal.

25

24. A method of inducing cytokine biosynthesis in an animal comprising administering a therapeutically effective amount of a compound of claim 2 to the animal.

25. A method of treating a viral disease in an animal comprising administering a therapeutically effective amount of a compound of claim 2 to the animal.

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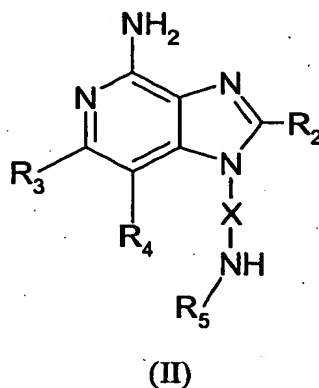
26. A method of treating a neoplastic disease in an animal comprising administering a therapeutically effective amount of a compound of claim 2 to the animal.

27. A method of inducing cytokine biosynthesis in an animal comprising
5 administering a therapeutically effective amount of a compound of claim 17 to the animal.

28. A method of treating a viral disease in an animal comprising administering a therapeutically effective amount of a compound of claim 17 to the animal.

10 29. A method of treating a neoplastic disease in an animal comprising administering a therapeutically effective amount of a compound of claim 17 to the animal.

30. A compound of the formula (II):



wherein: X is alkylene or alkenylene;

R₂ is selected from the group consisting of:

- 20 -hydrogen;
 -alkyl;
 -alkenyl;
 -aryl;
 -substituted aryl;
25 -heteroaryl;
 -substituted heteroaryl;
 -alkyl-O-alkyl;

-alkyl-S-alkyl;
-alkyl-O-aryl;
-alkyl-S-aryl;
-alkyl-O-alkenyl;
5 -alkyl-S-alkenyl; and
-alkyl or alkenyl substituted by one or more substituents selected
from the group consisting of:

-OH;
-halogen;
10 -N(R₆)₂;
-CO-N(R₆)₂;
-CS-N(R₆)₂;
-SO₂-N(R₆)₂;
-NR₆-CO-C₁₋₁₀ alkyl;
15 -NR₆-CS-C₁₋₁₀ alkyl;
-NR₆-SO₂-C₁₋₁₀ alkyl;
-CO-C₁₋₁₀ alkyl;
-CO-O-C₁₋₁₀ alkyl;
-N₃;
20 -aryl;
-substituted aryl;
-heteroaryl;
-substituted heteroaryl;
-heterocyclyl;
25 -substituted heterocyclyl;
-CO-aryl;
-CO-(substituted aryl);
-CO-heteroaryl; and
-CO-(substituted heteroaryl);

30 R₃ and R₄ are independently selected from the group consisting of
hydrogen, alkyl, alkenyl, halogen, alkoxy, amino, alkylamino, dialkylamino and
alkylthio;

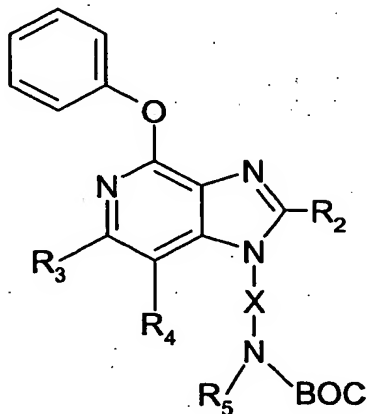
R_5 is H or C_{1-10} alkyl, or R_5 can join with X to form a ring that contains one or two hetero atoms;

each R_6 is independently H or C_{1-10} alkyl;

or a pharmaceutically acceptable salt thereof.

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31. A compound of the formula (IV):



(IV)

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wherein: X is alkylene or alkenylene;

R_2 is selected from the group consisting of:

- hydrogen;
- alkyl;
- 15 -alkenyl;
- aryl;
- substituted aryl;
- heteroaryl;
- substituted heteroaryl;
- 20 -alkyl-O-alkyl;
- alkyl-S-alkyl;
- alkyl-O-aryl;
- alkyl-S-aryl;
- alkyl-O-alkenyl;
- 25 -alkyl-S-alkenyl; and

25

-alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

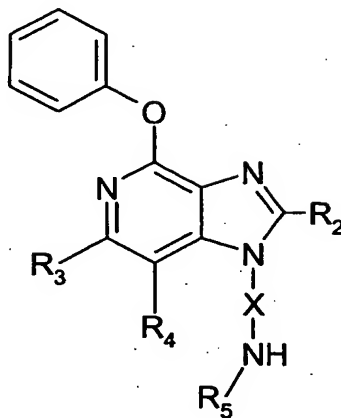
- OH;
- halogen;
- 5. -N(R₆)₂;
- CO-N(R₆)₂;
- CS-N(R₆)₂;
- SO₂-N(R₆)₂;
- NR₆-CO-C₁₋₁₀ alkyl;
- 10 -NR₆-CS-C₁₋₁₀ alkyl;
- NR₆-SO₂-C₁₋₁₀ alkyl;
- CO-C₁₋₁₀ alkyl;
- CO-O-C₁₋₁₀ alkyl;
- N₃;
- 15 -aryl;
- substituted aryl;
- heteroaryl;
- substituted heteroaryl;
- heterocyclyl;
- 20 -substituted heterocyclyl;
- CO-aryl;
- CO-(substituted aryl);
- CO-heteroaryl; and
- CO-(substituted heteroaryl);

25 **R₃ and R₄** are independently selected from the group consisting of hydrogen, alkyl, alkenyl, halogen, alkoxy, amino, alkylamino, dialkylamino and alkylthio;

R₅ is H or C₁₋₁₀ alkyl, or R₅ can join with X to form a ring that contains one or two hetero atoms;

30 each **R₆** is independently H or C₁₋₁₀ alkyl;
or a pharmaceutically acceptable salt thereof.

32. A compound of the formula (V):



(V)

wherein: X is alkylene or alkenylene;

R₂ is selected from the group consisting of:

-hydrogen;

-alkyl;

-alkenyl;

-aryl;

-substituted aryl;

-heteroaryl;

-substituted heteroaryl;

-alkyl-O-alkyl;

-alkyl-S-alkyl;

-alkyl-O-aryl;

-alkyl-S-aryl;

-alkyl-O- alkenyl;

-alkyl-S- alkenyl; and

-alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

-OH;

-halogen;

-N(R₆)₂;

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- CO-N(R₆)₂;
- CS-N(R₆)₂;
- SO₂-N(R₆)₂;
- NR₆-CO-C₁₋₁₀ alkyl;
- NR₆-CS-C₁₋₁₀ alkyl;
- NR₆-SO₂-C₁₋₁₀ alkyl;
- CO-C₁₋₁₀ alkyl;
- CO-O-C₁₋₁₀ alkyl;
- N₃;
- aryl;
- substituted aryl;
- heteroaryl;
- substituted heteroaryl;
- heterocyclyl;
- substituted heterocyclyl;
- CO-aryl;
- CO-(substituted aryl);
- CO-heteroaryl; and
- CO-(substituted heteroaryl);

R₃ and R₄ are independently selected from the group consisting of hydrogen, alkyl, alkenyl, halogen, alkoxy, amino, alkylamino, dialkylamino and alkylthio;

R₅ is H or C₁₋₁₀ alkyl, or R₅ can join with X to form a ring that contains one or two hetero atoms;

**each R₆ is independently H or C₁₋₁₀ alkyl;
or a pharmaceutically acceptable salt thereof.**